

**Before the
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In the Matter of)	
)	
Promotion of Distance Education)	Docket No. 98-12
Through Digital Technologies)	

COMMENTS OF THE CORPORATION FOR PUBLIC BROADCASTING, ASSOCIATION
OF AMERICA'S PUBLIC TELEVISION STATIONS,
AND PUBLIC BROADCASTING SERVICE

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February 5, 1999

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The Corporation for Public Broadcasting ("CPB"), Association of America's Public Television Stations ("APTS"), and Public Broadcasting Service ("PBS") hereby submit their comments in response to the Request for Comments and Notice of Public Hearing which appeared in the *Federal Register* on December 23, 1998.¹

CPB is a private, nonprofit corporation created and authorized by the Public Broadcasting Act of 1967,² to facilitate and promote a national system of public telecommunications that is accessible to all Americans. A myriad of instructional and educational programming funded by CPB and the Annenberg/CPB Project³ is distributed to students through a wide variety of electronic delivery systems used by public television stations.

APTS is a nonprofit membership association whose members comprise most of the

¹ Promotion of Distance Learning Through Digital Technologies, Docket No. 98-12, FR Doc. 98-34010, 63 Fed. Reg. 71167 (1998).

² 47 U.S.C. § 390 et. seq.

³ The Annenberg/CPB Project is a division of CPB. The PBS Adult Learning Service is the national distributor of the courses funded by this project.

nation's 353 public television stations. APTS represents its membership on a national level by presenting the stations' views to federal agencies, Congress, the Executive Branch, and other federal policy makers.

PBS is a nonprofit noncommercial program distributor and national membership organization for public television stations. PBS provides national program distribution and other program related services to the nation's public television stations and the general public. Through its member public television stations throughout the country, PBS programs reach over ninety-seven million Americans each week. In addition, PBS is the leading television resource in the country for classroom programming for adults and children. PBS has also been an active participant in online distribution, as evidenced by PBS ONLINE®, a PBS Internet website that receives up to six million "hits" every day and has more than 2.6 million unique visitors every month.

I. Introduction.

Public television's educational roots are deep. Indeed public television was founded by the nation's educational community. Today nearly two-thirds of public television stations are licensed to universities or state or local governments. Many of the nation's original distance learning⁴ programs were launched by public television, using both instructional television fixed service ("ITFS") and traditional terrestrial broadcast services. As technologies have evolved, those services have expanded to include videotape, satellite delivery, and Internet delivered materials, as more fully described in Exhibit 1 to these Comments.

⁴ CPB, APTS, and PBS use the terms distance learning and distance education interchangeably.

Public television remains focused on bringing high quality and valuable educational services to the nation. Public television provides distance learning opportunities to millions of classrooms, homes, workplaces, and other locations. In fact, over 70,000 elementary and secondary schools nationwide, serving approximately thirty million elementary and secondary students and over two million teachers, integrate public television services into their curriculum. In addition, public television stations provide educational services to post-secondary and adult learning students. Public television is currently among the largest providers of educational services to Americans.

Public television has already begun adapting its educational and distance learning services to the digital media and plans to continue providing and expanding educational opportunities in the digital age. As such, the entire public television community, including CPB, APTS member stations, and PBS, has a stake in the outcome of the proceeding at hand.

CPB, APTS, and PBS would like to use this opportunity to provide the Copyright Office with information that explains how public television currently provides distance learning opportunities through conventional and emerging technologies. In addition, these comments will also explain how public television currently utilizes and is planning to use digital capabilities to increase distance learning opportunities to all Americans. By providing concrete examples of public television's success in providing distance education services, CPB, APTS, and PBS hope to demonstrate what is possible in the digital future.

Like so many others who are interested in this proceeding, CPB, APTS, and PBS appreciate the balance that must be maintained between the copyright owners' rights and the nation's educational needs. Public broadcasters are copyright holders themselves, and represent the interests of copyright holders, as well as educators and providers of distance learning services. CPB, APTS, and PBS also believe that it is early in the digital evolution and therefore difficult to

anticipate precisely how distance learning will adapt to and be affected by digital technology.

Given all these caveats, however, the digital revolution has begun. With the information provided herein, CPB, APTS, and PBS believe the Copyright Office will be better positioned to evaluate how copyright laws will best ensure distance educators' ability to provide services while concurrently protecting copyright holders' rights. Regardless of the structure of any copyright regulation reform, CPB, APTS, and PBS urge that public television be allowed to continue to provide its distance learning services in furtherance of public television's nonprofit educational mission.

II. Public Television Provides a Wide Variety of Distance Learning Services.

In the December 23, 1998 public notice, the Copyright Office asked for specific comment regarding the nature of distance education services. The nature of the distance learning services provided by public television are as varied as the stations themselves and the communities they serve. All public broadcasters, though, share a common goal, which is to provide learning opportunities for students at all levels and abilities.

A. Distance Learning Should be Defined in Recognition of the Wide Variety of Services and Technologies.

In crafting a definition for distance learning, the Copyright Office should consider the breadth of services and technologies that may be utilized in the educational process. As the digital transition in the broadcasting industry evolves, the definition of distance learning should be flexible enough to accommodate advances in technological capabilities. By its nature, distance learning takes place at a distance, meaning the teacher and student are not co-located. Public television's distance learners participate in classes either live and interactively in real time, or via tape delay.

Public television offers distance learning through almost every technological means available to deliver distance education courses and materials to students and teachers across the country.

Technologies employed include satellite-delivered programming, one-way video/two-way audio, as well as two-way video/two-way audio. Public television also provides instructional programs via the Internet, traditional broadcast technologies, and ITFS.

Digital technology will give public television stations a powerful tool for expanding their educational mission, which is to make lifelong learning accessible to all Americans. In a system-wide strategic planning process, public television identified four major areas in which it plans to use digital technology to meet the nation's educational goals: (1) early childhood services (including expansion of the Ready to LearnSM service); (2) technology integration in K-12 education (with the goal of making enhanced K-12 services available to all schools); (3) nontraditional adult learning and workforce education and training (with the goal of increasing the reach of post-secondary telecourses and workplace training so that they will be available to all adult learners and workers); and (4) accessibility to digital services by unserved and underserved audiences (particularly physically challenged and non-English speaking people).

As the Copyright Office is aware, the Conference on Fair Use ("CONFU") considered but did not approve a Proposal for Education Fair Use Guidelines for Distance Learning. The proposal was attached as Appendix I to the CONFU Final Report to the Commissioner of the Patent and Trademark Office, dated November 1998. The Copyright Office may wish to consult that Appendix as it considers the issues raised in the December 23, 1998 public notice. Keeping that in mind, it is also important to recognize that many of the digital applications to distance learning are in their infancy, and it may be premature to predict, much less ordain, their continued development.

Any copyright reform should consider the varied nature of distance learning and the fact that educational materials can be transmitted using a number of technologies (both traditional and digital). Similarly, a definition for distance learning should recognize that not all students are located in the same place as the instructor, whether the students are located on the same campus in a different building, the same state, or anywhere in the country. With the technologies used for distance learning, education becomes a process that can be achieved without regard to location.

B. A Wide Variety of Distance Education Programs are Currently Available Through Public Television.

Public television already offers a myriad of a distance learning programs. The programs are offered to learners at all levels including those enrolled in classes at elementary and secondary schools, colleges and universities, post graduate schools, and adult learning centers. The distance education services offered by public television benefits students across the country. In fact, programming from public television is the most watched service in classrooms.⁵ Thus, public television contributes greatly to the curriculum of today's students.

The breadth of the services offered by public television range from the traditional broadcasting of instructional programming to computer-based educational forums. In some cases, teachers and students interact in real time. In other instances, students may view lectures on a delayed basis. Distance learning services are offered by public television at all geographic levels including nationally, state-wide, and by local stations. For convenience, CPB, APTS, and PBS have attached (as Exhibit 1) a description of some of the services offered by PBS and public television

⁵ In its June 1998 Survey, PBS programs were cited as the leading television resource of teachers and school libraries in Cable in the Classroom's national survey.

stations around the country.

C. Public Television Uses All Available Electronic Technologies to Distribute and Protect Distance Learning Services.

Public television uses all available technologies to provide distance education services. PBS and public television stations employ a variety of technologies to provide distance education services, including webpages, e-mail, teleconferencing, chat rooms, satellite broadcasts, compressed video, cable, ITFS, as well as increasingly hybrid technologies incorporating video, digital, and online media in educational settings. The interactivity of the technologies varies greatly depending on the methodology, philosophy, and technical capabilities of the educational institutions and the students.⁶

Technology can be used to prevent unauthorized use of the distance learning materials. Some stations currently use either encryption or Digi II fingerprinting for satellite delivered telecourses. Password protection can be also used for Internet sites. The security of digital distance education programs, though, can be accomplished through many different means that should only expand as technology improves.

PBS, along with many corporate, nonprofit, and government organizations, including the National Institute of Standards and Technology, and the Department of Defense, is participating in the Instructional Management System ("IMS") project. This international effort is developing open technological standards for instructional systems and content for the digital learning environment.

⁶ None of these technologies was specifically developed for distance education but public television has adapted them all for educational purposes. The Federal Communications Commission, however, restricts ITFS licensees to noncommercial educational institutions.

These standards are expected to include standards for explicit labeling of content, making it easier for educators and students to find educational materials and to identify the source of content, thereby potentially making copyright protection easier for the content made available on this system.

D. Public Television is Committed to Utilizing Digital Technology.

Public television has a long commitment to and a tradition of leadership in the development of digital technology. Among other things, public television has played an active role in developing the digital transmission standard for broadcast television and in testing various forms of digital technology. Indeed, public broadcasters were the first North American broadcasters to develop all-digital networks and technical facilities.

The U.S. broadcasting industry is in the midst of transitioning to a digital transmission standard. Under current rules all television broadcasters are expected to have digital broadcasts on the air no later than May 1, 2003. Public television expects to use digital technology in a variety of ways in fulfilling its educational and public service mission. High definition television will significantly enhance viewers' enjoyment of many public television signature programs that are well suited to this new technology. This includes, in particular, programs focused on the performing arts, drama and theater, science and nature, and travel and exploration.

Digital technology also will allow multicasting of standard definition programming, allowing public television to bring significantly more public service educational programming to new audiences. For example, on a single digital channel a public broadcaster could carry, in addition to its current programming, a dedicated children's channel, an adult lifelong learning channel, and a local programming channel. Multicasting will also permit public television to provide a more

comprehensive Ready to LearnSM service to children, parents and caregivers and will allow more stations to provide K-12 services to more elementary and secondary students throughout the country.

In addition, digital technology will enable public television to expand the way in which it communicates with audiences. The ability to integrate video-based programs with online data will allow students and teachers to download course material, textbooks, teacher and student guides, and teacher training material that will be embedded in instructional programming.

III. Public Television's Experience with Licensing Demonstrates the Need for Consideration of Public Television in Copyright Reform.

Public television's experience with obtaining rights to materials varies from project to project. In many cases, obtaining copyright permission is the responsibility of the faculty member or department offering the distance learning course, not the public broadcaster. If a public television station is merely the delivery entity of distance learning programming, the station experiences little involvement in copyright negotiations. In any event, public broadcasters can and do make information available to instructors to inform them about copyright laws.⁷ As described in the hearings before the Copyright Office, many schools and universities have guidelines for the use of

⁷ For example, PBS publishes a primer to assist educators in "reading the rights" for off-air recording of PBS programming, entitled Reading the Rights on PBS Primetime (and Other Related Copyrights), (1997).

educational media.

When the public broadcaster is responsible for course development, it is also responsible for obtaining copyright permission, whenever necessary. If pre-existing content is desired, the producer is careful not to use the content without clearing the rights. In some instances, it may be difficult to locate the rights holder or to obtain permission at a reasonable price.

Regardless of which party is responsible for obtaining permission, the general method for achieving permission is through negotiating directly with the copyright owner or the owner's representative. Permission may be granted or denied for a variety of reasons such as cost or type of program. In other instances, the distance education program producers can use public domain material, or adhere to the applicable "fair use" guidelines or laws.

A difficulty public television faces in clearing rights occurs when the broadcaster may have permission for an initial use but then encounters a need to renegotiate for additional permission if the program is to be used for anything other than as originally licensed. For example, this situation occurs if the program is transferred from one medium to another or when the material is used in different programs. Licensing hurdles tend to become more complex as technology offers a constantly evolving service platform, and a program must be cleared for an increasing number of distribution methods. This point is best illustrated by the fact that to date, some public broadcasters have had difficulty obtaining the right to online use of copyrighted material at affordable prices.

Public television recognizes that it is possible that online technology may eventually facilitate the process of licensing, identifying rights holders and negotiating conditions of use. That, however, is not presently the case. The online industry is a recent development, and many rights holders are understandably cautious about setting a precedent that might prove harmful to their future interests. Therefore, public television urges consideration of these licensing issues in any copyright reform.

IV. Flexibility to Extend Public Television's Distance Learning Services is Essential Under Any Copyright Reform

The education community depends on public television to deliver educational video and other educational materials to assist teachers as they educate the nation's students. Almost all public broadcasters have heard a teacher say at one time or another that a clip from a public television program on a scientific principle or life cycle of a plant was able to bring the subject to life for students in a way conversation and a textbook could not.

The possibilities that digital technologies promise are sometimes breathtaking. Students today, wherever located — in classrooms, at their home computers, in libraries, in cities and on farms — can roam the great libraries and museums of the world at the click of a mouse. Public television is in turn designing new and exciting distance learning courses that combine the best elements of the technologies available to educate students and learners across the country. In addition, public television is at the threshold of its transition to digital broadcasting, and formulating its strategic plans

to deliver digital educational services over the broadcast spectrum to classrooms and students. Those plans, courses and programs will be developed in cooperation with teachers, educational institutions, and other content providers across the country to ensure that they address the needs identified by those best positioned to know them.

Public television intends to weigh carefully the options suggested by the participants to this proceeding. CPB, APTS, and PBS urge the Copyright Office to consider whether and how the copyright laws need to change to assure that the rights of distance educators to use copyrighted works are not diminished by the advent of digital technology. Of course, the Copyright Office must also consider the rights of producers of educational content, which must be protected. However, it would be unfortunate if the development of perhaps the most exciting and powerful information technology were to lead to less access to educational materials.

V. Conclusion.

Policy makers and distance educators share an obligation to ensure that public television can continue to use new, digital technologies to meet their educational mission, of making educational resources available to all citizens and learners. The digital revolution will provide many opportunities for public television to expand its services, and tomorrow's copyright regime should be flexible enough to accommodate appropriate changes.

WHEREFORE CPB, APTS, and PBS urge that any copyright reform protect public television's ability to legitimately provide distance education services in any medium.

Respectfully submitted,

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February 5, 1999

Examples of Public Television Distance Learning Service Offerings

1. PBS.

PBS provides distance learning services to million of adults through the PBS ADULT LEARNING SERVICE® (“ALS”), which was launched in 1981. In addition, PBS provides teaching resources for teachers of grades K through 12 and other educational professionals that can be accessed remotely online. PBS’s efforts are complemented locally by the efforts and programs of many public television stations, networks and related state institutions. PBS’s distance education programs are described in more detail below.

ALS has a number of distance education components. The core of ALS is its distribution and licensing of more than 80 college credit distance learning “telecourses”. To date, nearly 5 million Americans have enrolled in an ALS telecourse. During any given semester, over 1,000 colleges and universities are offering these courses to their distance learning students. In 1998, ALS introduced PBS teleWEBcoursesSM, a combination of telecourse video programs and digital online instructional elements. ALS launched GOING THE DISTANCE® (“GTD”) in 1994. GTD is a focused effort to provide adults the opportunity to earn full degrees using distance education courses. Over 60 public television stations in 38 states are working with 180 colleges and universities in the GTD project. PBS’s goal is to have GTD present in all fifty states by the year 2000.

Two other distance education components of ALS are the PBS ADULT LEARNING SATELLITE SERVICE® (“ALSS”) and READY TO EARN®. Through the ALSS, PBS offers educational programming via digital satellite transmission to colleges, universities, schools and libraries nationwide, who license the rights to downlink and record the programs transmitted by PBS and either use them live or later for educational purposes. In 1997, over 6,000 colleges, schools and other organizations acquired these ALSS programs.

READY TO EARN is a PBS program for persons already in the workplace but whose educational needs are often unmet in traditional educational and business settings. This program seeks to provide these adults with the resources they need to develop skills they can use in the workplace. Educational programs are offered through video programs, CD-ROMs and live satellite events and online content areas. More recently, PBS added to this offering and established an adult literacy program, LITERACYLINK®, as part of READY TO EARN. LITERACYLINK was created pursuant to a grant from US Department of Education. Through LITERACYLINK, adults receive video and online instruction in the reading, writing, math and communication skills necessary to be successful in the workplace and to pass the GED test. Over 1,000 organizations have participated in LITERACYLINK alone since 1996.

PBS also provides additional resources to teachers of children and adults online. PBS produces, distributes and facilitates MATHLINE® and SCIENCELINE®, two professional development services for teachers of K through 12 that utilize distance learning technologies. Each service combines videotaped, standards-based instructional models with moderated online learning communities. These services produce monthly online features that include classroom activities, assessment and teaching strategies, recommended resources for teachers, and access to subject-area experts. Public television stations are also involved in these services. A number of stations broadcast the service videos and recruit local, online learning communities. Each station participates in these services in the manner that works best for its local community.

Through PBS ONLINE and the PBS TEACHERSOURCESM site, PBS provides over 60,000 pages of content for teachers, including lesson plans, online adventures and program companion teacher guides. This site receives between 15,000 and 20,000 unique visitors each week. PBS Teacher PreviewsTM, a weekly e-mail list sent to subscribing teachers, currently has a circulation of 4,200.

2. South Carolina.

The South Carolina Educational Television Network ("SCETV") launched a digital satellite network in 1993, that, using digital compression, provides up to 32 channels of programming simultaneously. The satellite transmissions are linked with an extensive terrestrial network of broadcast transmitters, ITFS stations, cable television distribution facilities, and microwave links. These facilities have enabled SCETV to provide video and audio programming and live interactive teleconferences to locations throughout South Carolina -- and users in other states as well -- on an extremely cost-effective basis.

SCETV provides instructional programming to over 98% of South Carolina's elementary and secondary school students, allowing an expanded curriculum and more equitable educational opportunities throughout the state. The network offers invaluable educational resources to all of South Carolina's students, enabling them to take advanced courses in math, science, and languages produced by other educational television facilities around the country as well as a wide variety of courses originating in South Carolina. In addition, SCETV provides more than 1,700 hours a year of medically oriented programming to 89 locations, including hospitals, mental health offices, health education centers, rural clinics, technical schools and correctional institutions.

3. Kentucky.

The Kentucky Authority for Educational Television ("KET") started its KET Star

Channels in 1989 to address a critical shortage of courses in math, science and foreign language courses in Kentucky public schools. Every public school, vocational school, state park, community college and university in Kentucky has been equipped with a satellite receiver system. The Star Channel system utilizes a variety of technologies including television, computers, telephone lines and interactive keypad technology to provide interactivity between instructors and students.

KET has also partnered with higher learning institutions, K-12 schools, and both public and private agencies to create and operate the Kentucky TeleLinking Network ("KTLN"). The KTLN is a fully duplex voice, video and data network of more than 150 receive sites around the state designed to address the state's needs by providing not only distance education but also professional development, tutoring, economic development, access to global databases, and health and human services such as telemedicine, remote diagnostics and case management. Nearly half of the KTLN sites are K-12, and most of the remaining sites are post-secondary and state agency owned. KTLN has also seen the deployment of three digital uplinks at state universities and the likely addition of a new digital satellite channel to support Kentucky's Virtual University when it opens in the Fall of 1999.

Furthermore, KET provides hundreds of hours of satellite time on its three current digital channels to state universities for their own credit classes each semester. KET has also made extensive use of its state-wide broadcast 15 transmitter network for educational purposes. Thirty years ago the Kentucky Telecommunication Consortium was created by the state legislature to provide college credit television courses to distance learners all over Kentucky. KET manages, promotes and broadcasts the telecourses chosen by the Consortium. Since then over 85,000 adults have enrolled in telecourses for college credit. In 1995 alone, more than 6,700 students enrolled in KET telecourses. In fact, one in three KET telecourse students would not have gone to college without KET.

4. Iowa.

The Iowa Communications Network ("ICN") is a state-wide fiber optic network capable of transporting interactive, two-way audio and video, data and voice services. The ICN facilitates the sharing of Iowa's outstanding educational resources among communities and school districts, large and small. Reaching virtually every school district and higher education institution, as well as Iowa Public Television, state agencies, federal agencies, Iowa National Guard sites, public libraries and hospitals, the ICN currently has 632 video classrooms, including 493 at K- 12 schools and higher education institutions.

The number of sites receiving ICN services is expected to grow to over 800 by the year 2000. The ICN provides interactive connections that permit the served

facilities to share educational resources, analog and digital transport capabilities, and affordable access to the Internet. Medical facilities use the ICN for diagnostic and consultative services and to provide education and training to their medical staff. Schools use the interactive distance learning classrooms to share instructional programming and to connect with experts, universities, state agencies, and other facilities that offer rich information resources. The high speed Internet connections offered by the ICN bring world resources to each learner through his/her desktop computer.

Nearly eighty percent of all ICN video usage is sponsored by educational institutions. Over 275,000 hours of interactive video time were logged during 1998. During spring 1998, 17,031 separate ICN video sessions occurred. An average of 826 sessions per week occurred during fall semester 1998.

The ICN provides Iowans local access to educational opportunities. Living in rural Iowa no longer means that a citizen cannot obtain a college degree. Customized ICN training for business and industry leads to rapid economic development in rural Iowa. In addition, health care consortiums of large hospitals and smaller clinics/hospitals use the ICN to provide specialized and expanded health care to all parts of Iowa.

5. Nebraska.

A broad consortium of educational organizations throughout Nebraska established NEB*SAT in 1990 to distribute educational programming by satellite, broadcast, and microwave facilities. The network has since been expanded by use of fiber optic and coaxial cable facilities. The fiber optic service, developed in cooperation with local telephone companies, has permitted NEB*SAT to establish a regional network of elementary, secondary and post-secondary schools throughout Nebraska to provide interactive instructional services in math, science, foreign languages, and other subject areas to K-12 classrooms.

In addition, Nebraska Educational Telecommunications ("NET") offers most distance education classes for credit, as part of a degree program accredited by North Central. The Internet is used for delivery of course materials, testing, and communication. For delivery of these materials, NET most commonly uses synchronous delivery for Internet-based delivery, while broadly using synchronous delivery for satellite delivery. Students, primarily at the graduate level, must travel to one of 441 satellite downlink locations in Nebraska or receive the information at home or work through the Internet. Content is typically based on that prepared for on-campus courses, but often must be reformatted for electronic delivery. To date, very little Internet material has included graphics, motion, or sound due to bandwidth limitations.

6. California.

KCSM Channel 60, dubbed *The Community College Channel*, is licensed to the San Mateo County Community College District in California. The station has a professional staff operating a full service public television station and serves as a learning laboratory for students enrolled in the College of San Mateo Broadcasting Arts Department. Distance Learning courses at the College of San Mateo consist of telecourses and online courses. Telecourses are preproduced television courses broadcast on KCSM TV and available on tape in the Library Learning Center. The online courses require students to have access to a computer with an individual e-mail account and/or access to the Internet. Students complete most of their course work outside the classroom, on their own time, usually at home or in the Library Learning Center.

7. Maryland.

Maryland Public Television ("MPT") utilizes fiber optic and other technologies to provide a variety of online, distance learning, and two-way interactive services to schools, libraries, and other facilities throughout the state, including educational courseware and teacher training programs to K-12 schools. By combining online information resources with video broadcasts, its facilities also allow students to take "electronic field trips" and explore a broad range of subject areas. Developing materials for local, national, and international audiences, the outreach arena strives to extend the learning beyond the original broadcast to targeted segments of the community.

College of the Air, a partnership involving MPT and 33 colleges and universities throughout Maryland, Northern Virginia, Delaware and parts of Pennsylvania, makes it possible for individuals to earn college credits towards a degree. *College of the Air* offers more than fifty college courses via distance learning enrolling 18,000 students per year. Because these courses require a minimum of on-campus presence, students with job and family responsibilities are able to take more courses than they could if their options were limited to traditional classes. Students with VCR's have the flexibility to choose where, when and how many times they wish to watch the TV lessons. Telecourse students have access to the same support services and campus privileges as on-campus students. The credits are transferable as required core courses or electives. Finally, MPT's current multimedia delivery system expands MPT's existing broadcast and satellite communications services to encompass compressed video teleconferencing, fiber optic electronic two-way distance learning, multimedia and other services.

8. Louisiana.

Louisiana Public Broadcasting ("LPB"), which owns its own satellite transponder, has been transmitting both its broadcast signal and its narrowcast signal digitally for several years. LPB, with its partners, has been delivering satellite courses to students in Louisiana, and has been using the Internet, e-mail, chat rooms and teleconferencing as part of distance education. Course materials are made available to teachers and students in electronic form.

Traditionally, the recipients of distance education programs in Louisiana have been students or teachers in rural, isolated areas or inner city schools. Today, urban, suburban and rural communities participate in distance education services provided by LPB. Distance education programs are offered for "Carnegie" units for high school students and credit toward an associate's degree or graduate level credit. Distance educational programs are offered at all educational levels, i.e. elementary, secondary, post secondary, university, and adult learning. The only criteria for enrolling in distance education programs offered by LPB is access to the programs via satellite or other form of delivery.

9. Nevada.

The Nevada Distance Education Consortium is an alliance formed by KLVX, the Clark County School District, the Community College of Southern Nevada ("CCSN"), the University of Nevada Las Vegas, Cooperative Extension Services at the University of Nevada Reno, and the Desert Research Institute. Members offer distance education courses for both high school and college credit, provide training for teachers seeking certification in several specialties, and coordinate marketing, production and distribution of video-based instruction. Over 6,000 students have enrolled in these courses in the first three years of the Consortium.

Services provided by KLVX include Instructional TV ("ITV"), which creates, purchases, and distributes professional development and student teaching materials for curriculum-correlated instructional material requested by teachers and administrators for their classrooms. Most programs include extensive support materials including teacher guides, suggested activities, student worksheets, Internet sites, or classroom software. Extensive teacher resource guides are printed annually and monthly listing materials available through TV, cable, ITFS, or satellite. ITV also operates a 12-channel wireless cable system in the Las Vegas Valley and two, 4 channel systems in Boulder City and Pahrump. Over 32,000 hours of video courses and teacher in-service programming are broadcast each year. Video materials are also fed to CCSN's compressed video telephone network, and Cox Cable for increased school access. Over 150,000 students use ITV services each week.

ITV produces daily, live, interactive distance education classes serving hundreds of rural students. For example, High School French, Elementary Spanish, and

Homework Hotline are produced by ITV for television, ITFS, and cable. An additional seven high school courses meeting the needs of at-risk students are available on tape, cable or TV.

Finally, the KLVX Satellite Center provides downlink and uplink services, clears rights to programming from satellites for local organizations, publishes taping guides and program access schedules for school districts, and coordinates state enrollment in distance education courses offered by the Satellite Educational Resources Consortium and the National Instructional Satellite Service.

KLVX course materials are made available in multiple formats. Restrictions on the materials are based on a wide range of criteria, such as the stated wishes of the content provider, distributor, and the disseminating entity. For full courses, a majority are accredited through local and state education organizations. However, accreditation is difficult to estimate because many distance education materials are supplemental to ongoing courses and thus not accredited independently.

Programs serving diverse communities are offered to learners of all ages, abilities, and credit levels. While rural sites have in the past and continue to exhibit strong needs for distance education due to geographic and other conditions, urban sites have increasingly indicated a need for these services given the needs and lack of resources provided to some educational sites and populations. Enrollment criteria are typically provided by the organization offering service, and student participation can range from a handful to thousands.

10. Ohio.

In 1993, WGTE, Toledo, OH launched Northern Ohio's first, interactive distance learning science initiative. The series, entitled Y?, harnessed the power of public television to turn TV30's viewing area into a 1,600 square mile classroom. WGTE's teleteachers took to the air live every Tuesday and Wednesday afternoon to get middle school students, and their teachers, involved in science like they had never been before. Y? combined electronic field trips, computer animation, giant props and plenty of hands-on activities with real time telephone interaction to prove that, when it's done right, television can be a very powerful teacher.

In January, 1999, WGTE capitalized on Y?'s regional success and launched a statewide series of broadcasts called Inquire Ohio. Like the Y? broadcasts that preceded them, these programs are live and interactive. They are designed to model effective, inquiry-based science instruction techniques for teachers while simultaneously giving students opportunities to engage in demonstrations and experience science like they've never seen it in the classroom. Inquire Ohio has its own website (www.inquireohio.org) which challenges students to pursue their science

inquiries on-line. The site also features a unique and powerful application for teachers called "The Resource Finders," a personal, on-demand curriculum assistance service. Teachers who want classroom media related to the Inquire Ohio themes contact WGTE's Resource Finders who search for appropriate videotapes or software and then use streaming video technology to allow the teachers to preview and order the materials on-line. The Resource Finders package the media they send to teachers with classroom tested advice for integrating effectively with the lesson plan.

For adult learners pursuing their GEDs, WGTE has arranged monthly, interactive tutoring/review sessions available via the interactive fiber optic network that the station created in Toledo in 1998.

11. Pennsylvania.

At WHYY, Philadelphia, the "WHYY Home College Service" is the first project of the Delaware Valley Distance Learning Consortium, an alliance of twenty-six colleges and universities organized by WHYY in 1995 with the purpose of making more education available to more people. In the first two years of the WHYY Home College Service, over 17,000 students from all walks of life enhanced their education and earned credits towards their degrees by registering for telecourses.

12. Arkansas.

The Arkansas Educational Telecommunications Network ("AETN") satellite network offers distance learning, on-line, and various other educational services throughout the state. AETN's interactive educational services include preschool, secondary, and graduate courses and programs, as well as continuing adult education courses, designed, among other things, to enhance educational curriculums, provide college credit hours, and provide teacher training. Through its on-line services, AETN provides curriculum resources, interactive databases, local and national topic-specific discussion groups, and technology resources information to the citizens of Arkansas.

AETN facilitates cost effective staff training for state employees. For example, Arkansas' Department of Human Services, the state's largest agency, used satellite distance learning to train over 6,000 employees statewide in Quality Management. The agency saved time and labor by accomplishing with one trainer in six sessions over a six month period, what a team of ten trainers would have presented in 240 sessions over two years. Travel expenses were minimized because employees trained at downlink sites within an average twenty miles of home. The costs associated with training, labor, and time were approximately eight percent of what they would have been for a team of ten trainers.

The Arkansas Office of Emergency Services joined with the Arkansas Pollution

Control & Ecology Department, the State Emergency Response Commission and the Arkansas Fire Academy, and used AETN satellite distance learning facilities to train and certify 3,600 "First Alert Providers" at approximately 100 sites across the state. Distance learning helped them to complete the training in six sessions versus 120, and save more than 60 percent of estimated travel costs for trainees. Results proved successful with a ninety-six percent pass rate on a federally mandated test. This hazardous materials training program was identified by FEMA as one of the best in the nation.

The Arkansas Early Childhood Commission, in collaboration with the Arkansas Department of Human Services Child Licensing Division and the American Red Cross, used AETN satellite distance learning facilities to provide training for approximately 2,200 day care providers and workers all over the state to help meet mandated licensing requirements.

The Arkansas Department of Education conducted nine monthly statewide faculty meetings during the school year with approximately 320 school districts using AETN satellite distance learning facilities.

13. New Hampshire.

In 1993, the NHPTV Knowledge Network, the educational arm of New Hampshire Public Television, implemented a comprehensive, fee-based educational service to which all of the K-12 schools in New Hampshire could subscribe. Beginning in September 1996, all schools will have access to this service at no cost to the schools.

The purpose of the service is to provide quality instructional television and professional development resources to New Hampshire's educational community. Using its five-transmitter, statewide broadcast network as the delivery vehicle, NHPTV broadcasts annually more than 500 hours of instructional programming in seven curriculum areas and more than eighty hours of professional development programming.

Using its satellite receive capabilities, NHPTV sponsors satellite videoconferences so that educators and students can participate in live, interactive, satellite-delivered programs. NHPTV also purchases statewide licenses for programs so that all schools with satellite-receive capabilities can access them. In addition, NHPTV distributes live programs, such as HEB Satellite In The Classroom (Wonders Under The Sea), by downlinking the satellite signal and rebroadcasting it over the statewide network. NHPTV has access to a satellite uplink through the University of New Hampshire Cooperative Extension Service and uses this facility to uplink training programs for use both in New Hampshire and throughout the United States.

The NHPTV Knowledge Network operates a World Wide Web site on the Internet, The NHPTV Knowledge Network Virtual School, that provides educators with on-line access to educational resources.

While the Knowledge Network is a subscription service, every one of New Hampshire's 410 schools, with a combined enrollment of more 190,000 students, are using components of the service.

14. Mississippi.

Mississippi Authority for Educational Television ("MAET") provides over-the-air educational television to all of Mississippi's elementary and secondary schools, community and junior colleges and four-year colleges. The 1998-99 Instructional Television ("ITV") schedule includes 210 program series ranging from art, health, foreign language courses to science, mathematics and social studies. In addition to over-the-air television receive capabilities in virtually every school, approximately 300 sites have satellite-receive facilities.

In 1995, Mississippi ETV received a \$4 million Star Schools grant to enlarge its existing Fibernet 2000 network and to build upon the connectivity that was already in place. The grant funded equipment for interactive video classrooms in high schools statewide and funded equipment for a network control center at Mississippi ETV in Jackson, the state capital. The Interactive Video Network consists of over 100 sites making video classrooms accessible to all areas of the state. The central hub of the network provides interconnectivity and switching for both the Community College Network and the network of Institutions of Higher Learning. Teachers and students involved in the network act as both producers of and participants in the high school courses. Over ninety different courses for students as well as staff development and in-service workshops for teachers and administrators are now available via the network. Credit courses from four-year colleges and universities, and from community colleges, are also available on the network. In the 1998-99 school year, 181 classes were distributed to 4,262 students. The network broadcast more than 400 hours of staff development courses to nearly 5,000 participants; and the network broadcast almost seventy-five hours of student special events to over 3,000 participants. The Mississippi Interactive Video Network now links ninety-nine high schools, Mississippi ETV, the Mississippi Department of Education, two universities, the Waterways Experiment Station, and NASA Stennis with two-way interactive capabilities.

The objective of the services provided is to improve the quality of classroom instruction and enhance learning opportunities for Mississippians of all ages. The Learning Services Division of MAET conducts teacher and administrator training to facilitate effective use of ITV programs and ancillary materials, as well as new and emerging technologies. During the 1997-98 school year, 6,000 educators received

training; ninety-two percent of school districts responding to an ITV survey reported using ITV in the classroom; 4,236 high school students and 556 college students completed courses taught over the Interactive Video Network. An additional 678 students enrolled in Adult Learning Service (ALS) courses broadcast over ETV. The numbers reached by satellite are in excess of 20,000 persons.

Mississippi is a very rural state with a significant portion of its population living at or below poverty level. Consequently, equity of educational opportunity between the schools has always been a serious concern. Distance learning programs provided through Mississippi ETV are giving poorer, more rural districts the opportunity to offer high quality courses they would otherwise not be able to provide for their students.

15. Idaho.

Idaho Public Television ("IPTV"), which reaches over ninety-five percent of the population of Idaho, provides Instructional Television ("ITV") material for K-12 teachers and Adult Learning Services ("ALS") telecourses, offered for credit by Idaho institutions. In addition, IPTV provides a portion of its statewide microwave system to the higher education institutions of Idaho to offer classes to students at other in-state institutions, as well as offering the PBS Ready-to-Learn, National Teacher Training Institute, electronic fieldtrips and GED programs. Idaho is also very involved in the planning for "Virtual University."

In the K-12 area, IPTV services are available to all teachers in Idaho in 573 traditional schools in the 1998-99 school year. These teachers taught 244,403 students in the public school systems in the 1997-98 school year. Fifteen thousand copies of Technology Toolbox for Teachers are distributed each month to educators throughout the state, highlighting curriculum links to on-air and web-based IdahoPTV resources. Twenty-seven hours of programming addressing professional development for K-12 educators related to technology use aired including programming on designing distance education and promising classroom practices found in Idaho. Overnight Instructional Television (ten hours per week) extends the availability of instructional material to all Idaho students with resources for educators to tape and use in the classroom. Many of these programs have companion websites. Through IPTV broadcasts, the state saves resources by not having to purchase multiple copies of educational and training materials that are instead offered in the telecourses for each school district.

In FY 1995 there were 600 college students registered for IPTV provided telecourses, and the number is growing. Language courses air daily through the school year. In 1998, sixteen telecourses for enrichment and college credit covered topics from child development to astronomy and ethics. This allows location bound students in the very small rural areas of Idaho to receive credits toward a degree. This service

saves money and resources in several ways. Students can improve their education without leaving home, and institutions can offer credit to students without an instructor leaving campus.

Sixty college and university classes were carried to distant campuses via the IdahoPTV microwave system in 1998, offering 3000 hours of fully interactive instruction to students. In the Fall Semester of the 1996-97 school year, IPTV delivered thirty-two courses from professors from one in-state college or university to students in other such institutions via the in-state digital microwave system. This saves the costs of establishing duplicative programs at every institution, as well as travel costs for instructors. IPTV also offers the forty-three GED on TV series which is used by state residents and by the Idaho Department of Corrections for its state prisoners.